

# United States Patent [19]

Burris et al.

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[54] MINIATURIZED HEADSET FOR TWO-WAY VOICE COMMUNICATION

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[58] Field of Search ..... 179/111 E, 121 D, 121 R, 179/180, 182 R, 182 A, 156 A, 156 R, 107 A; 379/430, 433; 381/183, 187, 68.6

## [56] References Cited

### U.S. PATENT DOCUMENTS

1,614,987	1/1927	Langenbeck et al.
1,893,143	1/1933	Koch
1,953,437	4/1934	Schier
2,487,038	11/1949	Baum
2,489,277	11/1949	Faralla
3,440,365	4/1969	Bryant et al.
3,524,951	8/1970	Bernardi et al.
3,586,794	6/1971	Michaelis
3,610,841	10/1971	Hutchings
3,691,319	9/1972	Bee
3,781,492	12/1973	Cragg et al.
3,819,860	6/1974	Miller
3,862,378	1/1975	Norris
		379/430

3,934,100	1/1976	Harada .....	181/135
4,020,297	4/1977	Brodie .....	379/430
4,273,969	6/1981	Foley et al. ....	379/430
4,375,016	2/1983	Harada .....	
4,403,120	9/1983	Yoshimi .....	381/187
4,420,657	12/1983	Larkin .....	379/430
4,443,668	4/1984	Warren .....	381/154
4,564,955	1/1986	Birch et al. ....	381/68.7
4,588,867	5/1986	Konomi .....	379/430

## FOREIGN PATENT DOCUMENTS

0143383 10/1981 European Pat. Off.

1363723 8/1974 United Kingdom .

2078057 5/1981 United Kingdom .

2082020 6/1981 United Kingdom .

2141903 1/1985 United Kingdom .

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## [57] ABSTRACT

A miniaturized headset for two-way voice communication is supported and positioned by the notch in the concha portion of a wearer's ear. The headset is reversible and may be worn on either the left or right ear. The earpiece includes sound output ports located therein to provide for alignment of a port with the auditory canal of either of the headset wearer's ears. The earpiece is disposed within the concha of the wearer's ear and outside the auditory canal.

17 Claims, 12 Drawing Figures

